

B.Tech III Year I Semester (R15) Supplementary Examinations June 2018

ELECTRICAL MEASUREMENTS

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is the use of ammeter shunt?
 - Define current sensitivity.
 - What are the limitations of Wheatstone bridge?
 - What are the disadvantages of measurement of inductance using Maxwell's bridge method?
 - List the errors in electrodynamic wattmeter.
 - What are the causes of creeping in energy meter?
 - What is the use of a potentiometer?
 - Mention any two sources of errors in coordinate type A.C potentiometer.
 - Mention the drawbacks of flux meter over ballistic galvanometer.
 - What is the function of ballistic galvanometer?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)**UNIT – I**

- 2 (a) Explain the construction and working of permanent magnet moving coil instruments.
(b) A moving coil instrument gives a full-scale deflection of 10mA when the potential across its terminals is 100mV. Calculate shunt resistance for a full-scale deflection corresponding to 100 A.

OR

- 3 (a) With neat diagram, explain the construction and operation of attraction type moving iron instrument.
(b) The inductance of a moving iron instrument is given as $L = (10 + 5\theta - \theta^2) \mu\text{H}$, where θ is the deflection in radians from zero position. The spring constant is $12 \times 10^{-6} \text{ Nm/rad}$. Estimate deflection for a current of 5 A.

UNIT – II

- 4 Draw the Kelvin's double bridge circuit and explain the measurement of low resistance using this bridge.

OR

- 5 (a) What are the difficulties in the measurement of high resistance?
(b) Describe in brief about the loss of charge method of measurement of high resistance.

UNIT – III

- 6 Explain the construction and theory of operation of dynamometer wattmeter.

OR

- 7 Explain the construction and operation of single phase induction type energy meter.

UNIT – IV

- 8 Describe the construction and working of a polar type ac potentiometer.

OR

- 9 Draw the diagram and explain the operation of DC Crompton's potentiometer.

UNIT – V

- 10 Explain in brief about the construction and operation of flux meter.

OR

- 11 Explain the determination of B-H loop using method of reversals.
